

Amendment to the Claims

Please cancel claims 1-4

5. (new) A semi-rigid pavement as a composite structure comprising:
an asphalt surface course;
a concrete subbase wherein the coarse aggregate of concrete is small grains crushed limestone finer than 9.5 mm of grading intermediate between the coarse and fine aggregates in the Terminology of ASTM C125 defined as enriched limestone waste;
a layer of granular material between surface course and concrete subbase, rigidity of said pavement being provided by said concrete subbase, its flexibility being provided by said asphalt surface course, the layer of granular material resting on said concrete subbase allowing the asphalt surface course to work as a flexural part of this composite structure; and
said granular layer allowing the limitation of deformations and corresponding reduction of fatigue stresses and cracking of said asphalt surface course to desirable level by the choice of thickness and quality of granular material, the concrete of said subbase being characterized by specified compressive strength f_c' and modulus of rupture (MR) up to 5,000 and more than 750 psi, respectively.

6. (new) A pavement of claim 5 wherein said small grains crushed limestone as a coarse aggregate of concrete of subbase defined as enriched limestone waste is a processed by-product of the manufacture of crushed limestone of regular size numbers 56, 57, 6 and 67 with rated dimensions 25-9.5 mm, 25-4.75 mm, 19-9.5 mm and 19-4.75 mm, respectively, the physical properties of this coarse aggregate are in accordance with requirements of ASTM C33.

7. (new) A pavement of claim 5 wherein the amount of concrete of subbase coarse aggregate finer than 4.75 mm should be less than that of the largest size of fine aggregate number 9 according to ASTM C33 and close to, but not exceeding, two-thirds of the total weight of aggregate.

8. (new) A pavement of claim 5 wherein the amount of concrete of subbase coarse aggregate finer than 2.36 mm (Sieve No. 8) should not exceed about 10% of total weight of aggregate.

9. (new) A pavement of claim 5 wherein the amount of concrete of subbase coarse aggregate finer than 1.18 mm (Sieve No. 16) should not exceed about 7% of the total weight of aggregate,

10. (new) A pavement of claim 5 wherein the amount of concrete of subbase coarse aggregate finer than 300 μm (Sieve No. 50) in the aggregate bin of concrete plant should not exceed about 3.0% of the total weight of aggregate.

11. (new) A pavement of claim 5 wherein the concrete of subbase of specified compressive strength fc' and modulus of rupture (MR) is up to 5,000 and more than 750 psi, respectively, whereas the values of the modulus of rupture (MR) of concrete equal to 550, 600, 650, 700, and 750 psi correspond to the values of the specified compressive strength fc' of this concrete equal to 3,000, 3,500, 4,000, 4,500, and 5,000 psi, respectively.

12. (new) A pavement of claim 5 wherein said concrete of subbase with small grains crushed limestone finer than 9.5 mm as a coarse aggregate of grading intermediate between the coarse and fine aggregates in the Terminology of ASTM C125 and defined as enriched limestone waste is characterized by compressive strength higher at least by 10% and up to 20% than that of concrete of the same consumption of cement with crushed limestone as a coarse aggregate of grading corresponding to the least Size of coarse aggregate No. 89 and largest Size of fine aggregate No. 9 according to ASTM C33, respectively.

13. (new) A pavement of claim 5 wherein concrete of said subbase with small grains crushed limestone finer than 9.5 mm as a coarse aggregate of grading intermediate between the coarse and fine aggregates in the Terminology of ASTM C125 and defined as enriched limestone waste is characterized by compressive strength higher or at least close to that of concrete of the same consumption of cement and twice as high consumption of admixture with crushed granite of regular sizes as a coarse aggregate while the flexural strength of this concrete is higher than that for concrete of

the same consumption of cement with crushed granite of regular sizes as a coarse aggregate.

14. (new) A method of making of concrete of pavement comprising the steps of :

a. preparing of small grains crushed limestone finer than 9.5 mm of grading intermediate between the coarse and fine aggregates in the Terminology of ASTM C125 defined as enriched limestone waste and used as a coarse aggregate of concrete of specified compressive strength f_c' and modulus of rupture (MR) up to 5,000 and more than 750 psi, respectively;

b. mixing and placing said concrete.

15. (new) A method of making of concrete of pavement of claim 14 wherein small grain crushed limestone finer than 9.5 mm as a by-product of manufacture of crushed limestone of regular size numbers 56, 57, 6 and 67 with rated dimensions 25-9.5 mm, 25-4.75 mm, 19-9.5 mm and 19-4.75 mm, respectively, is processed at the concrete plant to the grading intermediate between the coarse and fine aggregates in the Terminology of ASTM C125, the amount of coarse aggregate finer than 4.75 mm in aggregate bin being less than that of the largest size of fine aggregate number 9 according to ASTM C33 and close to, but not exceeding, two-thirds of the total weight of aggregate amount of coarse aggregate finer than 2.36 mm (Sieve No. 8) in aggregate bin not exceeding about 10% of total weight of aggregate, the amount of coarse aggregate finer than 300 μ m (Sieve No. 50) in the aggregate bin not exceeding about 3.0% of the total weight of aggregate, enrichment of this by-product of grading finer than 9.5 mm being provided to obtain required ratio between parts of this material finer and coarser than 4.75 mm and to reduce the amount of material finer than 2.36 mm and 300 μ m to the required level by washing or screening or by combination of procedures with or without separation of parts of this material finer and coarser than 4.75 mm with consecutive mixing of these parts, the choice of method of enrichment depends on the grading of raw material.

16. (new) A method of making of concrete of concrete pavement of claim 14 wherein small grain crushed limestone finer than 9.5 mm as a raw material is processed at the quarry before transportation to a concrete plant to the grading coarser than intermediate between the coarse and fine aggregates in the Terminology of ASTM C125 to take into account inevitable breakdown of this material due to handling and transportation which relates mainly to the part of material coarser than 4.75 mm, the difference between grading of this material at the quarry after enrichment and at the aggregate bin of concrete plant depends on the water-absorption of limestone and conditions of handling and transportation.

17. (new) A method of making of concrete of pavement of claim 14 with reduced consumption of cement as compared with concrete with coarse aggregates of other grading wherein concrete requires consumption of cement less by 10% and 20% than that of concrete of the same compressive strength with crushed limestone as a coarse aggregate of grading corresponding to the least Size coarse aggregate No. 89 and the largest Size fine aggregate No. 9 according to ASTM C33, respectively, consumption of cement of this concrete being up to ten percents less or at least close to that of concrete the same compressive strength with crushed granite of regular sizes as a coarse aggregate.

18. (new) A method of making of concrete of pavement of claim 15 wherein workability and pumpability of concrete with enriched limestone waste as a coarse aggregate is higher than that of any concrete with coarse aggregate of regular sizes whereby this concrete requires twice less consumption of admixture than that of concrete of the same compressive strength with crushed granite of regular sizes as a coarse aggregate.

19. (new) A semi-rigid pavement as a composite structure comprising:
an asphalt surface course;
a concrete subbase wherein the coarse aggregate of said concrete is small grains crushed limestone finer than 9.5 mm defined as enriched limestone waste;
and

a layer of granular material between said surface course and said concrete subbase;

wherein said layer of granular material resting on said concrete subbase permits said asphalt surface layer to function as a flexural part of said composite structure with resulting reduction of fatigue stress and cracking of said asphalt surface course.

20. A semi-rigid pavement as claimed in claim 19 wherein said crushed limestone is of grading intermediate between coarse and fine aggregates in terminology of ASTM C125 and defined as enriched limestone waste.

21. A semi-rigid pavement as claimed in claim 19 wherein the concrete f said subbase is characterized by specified compressive strength f_c^1 and modulus of rupture (MR) up to 5000 psi and more than 750 psi, respectively.